



**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

**PATENT**

**TC 1700**

**NOV 13 2003**

**RECEIVED**

In Re Application of

: J. Morando

For

**ALLOY COMPOSITION SUITABLE  
FOR MOLTEN MAGNESIUM  
ENVIRONMENTS**

Serial No.

: 09/535,550

Filed

: March 27, 2000

Art Unit

: 1742

Examiner

: Sikyin IP

Attorney Docket No.

: JAM 2 0003

**REPLY BRIEF UNDER 37 C.F.R. §1.193(b)(1)**

Mail Stop Appeal Brief- Patents  
Commissioner for Patents  
P.O. Box 1450,  
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Dear Sir:

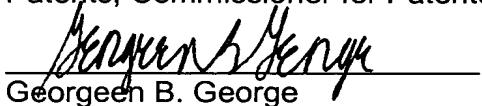
This Reply Brief is in response to the Examiner's Answer filed on September 5, 2003 in the above-captioned appeal.

Any required petition for extension of time for filing this brief and fees therefor, are dealt with in the accompanying Transmittal of Reply Brief.

What follows is Appellant's Reply Brief in accordance with 37 C.F.R. §1.193(b)(1).

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## **RESPONSE TO THE EXAMINER'S ARGUMENTS**

### **I. Related Appeals**

In his Answer, the Examiner states that “[t]he brief does not contain a statement identifying the related appeals and interferences which will directly affect or be directly affected by or have a bearing on the decision in the pending appeal.” Appellants are somewhat puzzled by this statement. In their appeal brief resubmitted on June 4, 2003, the Appellants stated “currently, it is believed that there are no other appeals or interferences in process or pending before the U.S. Patent and Trademark Office which the present application bases its priority from, or any cases which base its priority upon the present application, that will directly affect, or will be directly affected by, or will have a bearing on the Board’s decision in this appeal.” (Section II of appeal brief). Thus, Appellants acknowledged that they knew of no related appeals to the present one. Appellants therefore submit that an explicit statement as to the presence of any related appeals has already been submitted.

### **II. Grouping of Claims**

Appellants disagree with the Examiner’s contention that “all claims have the same scope.” The Appellants are again puzzled by this statement. The dependent claims further limit and define the scope of the invention over the independent claims. Thus, they are certainly not of “the same scope”. For example, current claim 28 contains no concentration ranges of the various metals in the alloy comprising the component. The remainder of the claims contain limitations reciting defined ranges for one or more of these metal components. The Examiner cannot therefore contend that all the claims have the same scope.

Appellants have done far more than “merely [point] out the differences in what the claims cover” as the Examiner contends. Appellants go into a great deal of detail in the appeal brief pointing out where the dependent claims recite limitations not disclosed or suggested by the prior art. (See, e.g., page 7, paragraph 1 and page 8, paragraphs 1-3). Thus, even if it is found that the cited art renders independent claim 28 unpatentable, Appellants submit that one or more of the dependent claims are patentable based on additional recitations not disclosed or suggested in the references.

### III. The Examiner's Arguments

In his answer, the Examiner continues to contend that claim 28 is anticipated under 35 U.S.C. §102(b) by JP 63274740; JP 09049051; JP 11293410; and JP 08325673. Appellants respectfully disagree.

As detailed previously, the present application is directed to a component of equipment for use in molten metal melts which contain magnesium. The component is formed from an alloy comprising iron, chromium, molybdenum, vanadium, niobium, cobalt, and tungsten and at least one of boron and carbon. JP 63274740, JP 09049051, JP 11293410, and JP 08325673 are all directed to compositions and various parts made from these alloys. JP 63274740 is directed to a sintered rocker arm of a V-type 6-cylinder gasoline engine. Such a part is not intended to contact molten magnesium. JP 09049051 is directed to surface layers of rolls made of iron alloys to improve resistance against heat cracking and surface roughening without deteriorating wear resistance due to segregation of Ce and B at grain boundaries. JP 11293410 is directed to hardened steel having good mechanical properties. JP 08325673 is directed to rolls suitable for use in hot strip mills. Nowhere do the cited references suggest the use of the alloys for submersion in molten magnesium.

In contrast, the present invention claims components for use in molten magnesium melts. The Examiner alleges that the present claim limitations to a particular component are not necessary to consider. However, when the present application was originally filed, it contained claims drawn both to alloy compositions as well as the present claims drawn to a component of equipment for use in magnesium molten metal melts containing the same alloy compositions. In a restriction requirement dated May 31, 2001, the Examiner required an election between the composition claims and the component claims. This indicated that the Examiner thus gave suitable weight to the product recitation "a component of equipment for use in molten metals which include magnesium" since the product claims recited the same alloy as the composition claims. Otherwise, there would be no basis for the restriction requirement.

Now however, the Examiner is attempting to argue the exact opposite proposition, i.e., that the claimed component for use in molten magnesium melts product is anticipated by references only disclosing an (allegedly) identical alloy composition but

not a component for use in molten magnesium melts made from that alloy. The Examiner is reversing the position he took in the restriction requirement that the claimed component for use in molten magnesium melts is a distinct invention from the composition and instead argues that the noted references anticipate (and therefore disclose all aspects of) the claimed component by (allegedly) disclosing the compositions that the component is made from. This is inappropriate. Appellants submit that even assuming for purposes of argument that the claimed alloy was disclosed in the discussed prior art, manufacturing a component from such an alloy for use in molten magnesium processing is not suggested by the prior art of record, and therefore the claimed component is patentable.

Moreover, the present invention states that it is known that alloys have a relatively short life in such environments because of the destructive effects of the molten magnesium on the components contacting the molten metal (page 1, lines 22-25). The cited references do not suggest an ability to overcome this problem. The Examiner cannot simply dismiss this limitation. Accordingly, withdrawal of the rejection is respectfully requested.

The Examiner contends that the cited references inherently possess the claimed attribute of being suitable for use in molten magnesium melts. This misses the point. Particularly, whether or not the alloy used to manufacture a rocker arm (see JP 09049051, for example) would inherently possess resistance to molten magnesium does not suggest the manufacture of molten magnesium treating components therefrom. Accordingly, the Examiner's focus on the inherent properties of the prior art alloy is irrelevant given the absence of a suggestion to use those alloys to manufacture a molten magnesium treatment component.

Furthermore, as the Board will appreciate, inherency must be a necessary result, not merely a possible result. *In re Oelrich*, 212 USPQ 323 (CCPA 1981); *Ex parte Keith*, 154 USPQ 320 (POBA 1961). See also, *In re Robertson*, 49 USPQ2d 1949, 1951 (Fed. Cir. 1999).

In relying on a theory of inherency, the Examiner must provide a basis in fact or technical reasoning to support the determination that the allegedly inherent characteristics necessarily flow from the teachings of the prior art. *Ex parte Levy*, 17 USPQ2d 1461 (BPAI 1990).

Here, none of the references can be said to disclose alloys that necessarily have characteristics suitable for use in magnesium melts. That is, while the references disclose alloys having compositions similar to the alloy in the claimed component, the differences are such that that it cannot be said that those prior art alloys are necessarily suitable for use in molten magnesium. Thus, for example, JP 63274740 discloses an extremely broad range for Mo and W (5-25%) that greatly exceeds even the broadest presently claimed ranges (2.0-12.0 and 0.5-10.0, respectively). The disclosure of this extremely broad range does not render the narrower claimed range obvious, especially when the new and unexpected result of molten magnesium resistance in the resulting alloy is the result. Likewise, JP 63274740 discloses that Ni may be present in a concentration of up to 20% (page 5 of translation). The present invention preferably contains very little, if any, Ni due to its extremely high C<sub>s</sub> in magnesium (page 11). The same can be said for JP 11293410, which discloses a Ni content that is quite high (1-24%). Such alloys would be extremely unlikely to have the claimed properties in molten magnesium for the reasons discussed in the present specification. Thus, it is clear that the cited references do not necessarily possess the recited characteristic of being suitable for use in molten magnesium and therefore fail to render the present claims unpatentable.

While it is true that a mere statement of a new use for an otherwise old or obvious composition cannot render a claim to the composition patentable, when a functional limitation is not possessed by the prior art and claimed, the claim is patentable. That is, "there is nothing wrong with defining something by what it does rather than what it is." *In re Swinehart*, 169 USPQ 226, 228 (CCPA 1971).

Here the recited preamble "for use in molten melts which include magnesium," further defines the structural limitations of the claimed invention. That is, the Appellants recognized that conventional equipment used for moving and transferring metals in a bath of molten metal have a relatively short life span because of the destructive effects of the molten metal on the components contacting the molten metal (page 1, lines 22-25). This is particularly true with regard to magnesium and magnesium/aluminum baths for refining of magnesium which operate at temperatures up to around 1800°F (page 1, lines 8-10). In this regard, there inheres in the component specified in the preamble, a problem that transcends that before prior artisans and the

solution of which is not known to them. The nature of the problem characterizes the elements comprising the alloy composition, and recited in the body of the claim following the term "comprising", so as to distinguish over the prior art. In this regard, the preamble is necessary to give life, meaning and vitality to the claims, making it a necessary limitation for consideration. Here, there is no indication that the references that the Examiner has cited are suitable for use in such environments. Thus, the claimed preamble structurally defines and limits the claim and patentably distinguishes the present invention over the prior art.

With respect to the obviousness rejection, the Examiner has rejected claims 2, 4-27, 29, and 34 under 35 U.S.C. § 103 (a) as being unpatentable over JP 09049051, claims 2, 4-7, 10-16, 18, 20-26, 29, and 34 under 35 U.S.C. § 103(a) as being unpatentable over JP 08325673, claims 2-4, 6-13, 16-26, 29, and 34 under 35 U.S.C. § 103(a) as being unpatentable over JP 63274740, and claims 2-9, 14-18, 20, 22, 23, 26, 29, and 34 under 35 U.S.C. § 103(a) as being unpatentable over JP 11293410. Appellants respectfully disagree.

First, the cited references do not suggest a component of equipment for use in molten melts which include magnesium. Appellants note and agree with the Examiner's contention that a new use for an old product does not impart patentability thereto. However, we are not dealing here with the case of identical compositions in which the intended use is the only distinguishing feature. Rather, the claims of the present application recite the use of a very specific alloy in the component that is not disclosed in the prior art references. The Examiner is attempting to argue that not only is the specific alloy composition rendered obvious by the prior art, but also its characteristic resistance to molten magnesium. This is completely improper. There is no suggestion to modify the prior art alloys because there is no recognition that such modification will result in an alloy particularly suited for use in molten magnesium melts. The presence of a property not possessed by the prior art is evidence of unobviousness. *In re Papesch*, 137 UPSQ 43 (CCPA 1963).

With respect to the rejection over JP 63274740, the Examiner states that the claim is anticipated by the reference. Appellants respectfully note that the reference includes a range of 0.5-2.5 wt% for boron. The present invention, by contrast, includes a claimed limitation of B below the range of the Japanese patent. Specifically, claim 4

includes a B range of between about 0.15 and 0.5 wt%. Claim 5 includes a B limitation between about 0.2 and 0.3 wt%. The Examiner has rejected claim 4 as being obvious over JP 63274740 but not claim 5. However, as detailed on page 9 of the translation of that reference, "an amount [of boron] less than 0.05% cannot provide sufficient effectiveness". Thus, JP 63274740 actually teaches away from any concentration of boron less than 0.05% as claimed. Further, claim 24 claims wherein the alloy is substantially free of nickel. JP 63274740 discloses a nickel concentration of up to 20%. Further, and more generally, JP 63274740 discloses several broad ranges or ranges tangential to those claimed. It is well recognized that a claim to a species may be unobvious when the prior art broadly discloses a genus. *In re Jones*, 21 USPQ2d 1941 (Fed. Cir. 1992). Here, the Examiner has provided no explanation as to why the skilled artisan would select Appellants' claimed range of each of the recited constituents as opposed to the range disclosed in the reference of record. Accordingly, withdrawal of the rejection is respectfully requested.

Similar arguments apply to the remainder of the references. With respect to the rejection over JP 08325673, the Examiner has stated that the reference discloses 3-8 wt% vanadium and 0.1-2 wt% niobium, which anticipate the claimed 3 wt% V and 2 wt% Nb in the present invention. Appellants note that the present application actually claims a range of 0.5-3 wt% V (claim 16), less than the lower limit of vanadium in the reference of record, and a range of 2-4 or 2.8-3.2 wt% Nb (claims 17 and 18), both of which are greater than the ranges cited in the reference of record. The Examiner has again provided no explanation as to why the skilled artisan would select Appellants' claimed range of each of the recited constituents as opposed to the range disclosed in the reference of record.

With respect to JP 11293410, the Examiner states that the abstract discloses 0.0-2 wt% Nb and less than or equal to 3 wt% Co. The present invention, by contrast, claims a Nb concentration of about 2-4 or 2.8-3.2 wt% (claims 17 and 18), a range above that of the abstract, and a Co concentration of about 3.0 to 5.0 wt% (claim 20), a range above that of the abstract. Furthermore, the abstract fails to address the S, P, and Ta requirements of the present invention. The Examiner states that the claimed contents include zero and the cited reference is therefore not required to recite the elements. However, Appellants assert that there is no teaching or explanation that

would render the above referenced claims regarding S, P, and Ta obvious to the skilled artisan. Accordingly, withdrawal of the rejection is respectfully requested.

With respect to JP 09049051, the reference fails to suggest the sulfur requirements of claim 6, the phosphorus requirements of claim 7, the chromium requirements of claim 9, or the tantalum requirement of claim 22.

Finally, and most importantly, the Examiner has rejected claim 27 exclusively on JP 09049051. Appellants submit that even if JP 09049051 discloses broad concentration ranges that overlap and include the claimed narrow ranges, one practicing the invention of JP 09049051 would not be motivated to select these narrow ranges together to make the claimed alloy suitable for use in molten magnesium melts. "The fact that a claimed compound may be encompassed by a disclosed generic formula does not by itself render that compound obvious." *In re Baird*, 29 USPQ2d 1550, 1552 (Fed. Cir. 1994). That is, the fact that claimed species or subgenus is encompassed by a prior art genus is insufficient by itself to establish a *prima facie* case of obviousness. Rather, a proper obviousness analysis involves the traditional three step process first outlined in *Graham v. John Deere*. The Examiner has failed in his burden to establish this *prima facie* case of obviousness and has instead presented conclusory statements based on the overlap of ranges.

In short, the Examiner cites several instances where the references teach a range of weight percents for the various elemental components of the claimed alloy that touch but do not overlap the claimed ranges. In such an instance, a *prima facie* case of obviousness only exists where the claimed ranges are close enough that one skilled in the art would have expected them to have the same properties *Titanium Metals Core of America v. Banner*, 227 U.S.P.Q. 773 (Fed. Cir. 1985). Here, there is no indication that the alloys disclosed in the cited art would have the same properties as those claimed in the present invention. Specifically, there is no indication that those alloys would be suitable for use in molten melts which include magnesium. Thus, although the disclosed weight percent ranges may be similar to those claimed, the differences result in different properties in the claimed invention than the alloys of the cited prior art.

Moreover, the Examiner states that with respect to the claimed contents of S, P, Si, and Ta, the claimed ranges include zero and the cited reference is thus not

required to recite said elements. Appellants respectfully note that the present invention specifies a concentration of less than about 4.5 wt% Ta (claim 22). The reference of record makes no reference to Ta. Therefore, there is no guidance for the skilled artisan in the reference of record to select or exclude Ta as a possible component of the alloy, or to specify the low range. Additionally, the present invention claims an alloy "substantially free of sulfur and phosphorus" (claim 28). The references of record provide no teaching or explanation that would render this claimed limitation obvious as alleged by the Examiner. Accordingly, withdrawal of the rejection is respectfully requested.

**CONCLUSION**

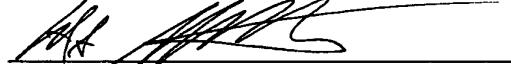
In view of the above, Appellants respectfully submit that claims 2-29 and 34 are not anticipated or rendered obvious by the cited art.

Accordingly, it is respectfully requested that the Examiner's rejections be reversed.

Respectfully submitted,

FAY, SHARPE, FAGAN  
MINNICH & McKEE, LLP

Dated: November 5, 2003

  
\_\_\_\_\_  
Scott A. McCollister, Reg. No. 33,961  
1100 Superior Ave., 7<sup>th</sup> Floor  
Cleveland, Ohio 44114  
(216) 861-5582